

REMARKS

Claims 3-11 are pending in this application, all of which have been finally rejected.

Claims 3-11 are finally rejected under 35 U.S.C. §103(a) as being obvious over Shinosaki et al. (JP 07-025946) and U.S. Patent No. 5,244,854 ("Noristi et al."), independently.

Applicants' claims are directed to a process for the preparation of propylene homopolymers by polymerizing propylene at from 20° to 50°C and from 1 to 100 bar in the presence of a Ziegler-Natta catalyst. The process comprises, *inter alia*, in a first stage, adding a solution of a chlorine-free magnesium alkyl compound in an inert solvent to an inorganic oxide carrier, allowing this mixture to react at specified conditions, then reacting the mixture with a C<sub>1</sub>-C<sub>8</sub> alkanol to provide a chlorine-free intermediate. The titanium halide and electron donor compound are then added to the chlorine-free intermediate.

Shinosaki et al. discloses the use of non-chlorine containing magnesium compounds (pg. 19, paragraph 0057) provided that the compound be brought into contact with a halogen or active carbon to oxygen bonds, such as alcohol, ester, ketone and aldehyde. However, Shinosaki clearly points to the desirability of using a halogen-containing magnesium compound

(page 19, paragraph 0061) and states that magnesium chloride, alkoxy magnesium chloride, and allyloxy magnesium chloride are considered to be ideal (paragraph 0062). Working Example 1 illustrates the use of magnesium chloride (pg. 47, paragraph 0174).

The Examiner relies upon the argument that Shinosaki et al. generically suggests applicant's claimed invention. The Office Action states that the reference is to be taken in its entirety, and that isolated teachings should not be used against its entirety. However, the "entirety" of the Shinosaki et al. reference includes the statement that "it is desirable that this magnesium compound be present in the form of a halogen-containing magnesium compound in the resulting titanium catalyst component" with ideal magnesium compounds being the chlorine-containing magnesium compounds specified in paragraph (0062). Thus, the entirety of the Shinosaki et al. reference includes a teaching away from applicants' claimed invention, and not taking this into account is in itself using isolated teachings. The relevant portions of a reference include not only those teachings which would suggest particular aspects of the invention to one of ordinary skill in the art, but also those teachings which would lead such a person away from the

invention. See, *In re Mercier*, 185 USPQ 774, 778 (CCPA 1975). One skilled in the art, upon reading the Shinosaki et al. reference, would find no motivation to perform applicant's claimed method as opposed to any other.

The Noristi et al. reference discloses the use of a metal oxide support impregnated with magnesium compounds containing Mg-C bonds, and further that the support containing the Mg compounds can be reacted with compounds such as HCl, SiCl<sub>4</sub>, chlorosilane, HSiCl<sub>3</sub>, Al-alkyl halides, water, alcohols, carboxylic acids, orthoesters, esters, aldehydes, ketones and carbon dioxide. (Noristi et al., Col. 5, lines 6-22). Applicants' process comprises, *inter alia*, adding a solution of a chlorine-free magnesium alkyl compound to the inorganic oxide carrier, reacting the mixture under specified conditions, then mixing and reacting with a C<sub>1</sub>-C<sub>8</sub> alkanol to provide a chlorine-free intermediate. The Office Action sets forth the argument that Noristi et al. provides a suggestion of applicant's claims. However, Noristi et al., as part of a generic disclosure, does not suggest applicants' invention, as opposed to any of the other methods. Applicants' invention avoids the use of magnesium halide or of chlorinating the magnesium alkyl compound. Noristi et al., on the other hand, teaches that the

Mg compound with Mg-C bonds can be reacted with HCl or other chlorine compounds, thereby also providing teachings away from applicant's invention. Thus, one skilled in the art, upon reading Noristi et al., will find no suggestion to employ Applicants' claimed method as opposed to any other, or any teaching which would render it obvious to employ Applicants' method.

Even if, *arguendo*, a *prima facie* case for obviousness had been raised, the rebuttal evidence provided by Applicants in the Examples has not been adequately considered. Applicants' Examples 1, 2 and 3 in accordance with the claimed process, as compared with Comparative Examples A, B and C which employ the use of HCl for the chlorination of the magnesium compound, clearly demonstrate that Applicants' method provides superior results. Not only are the chlorine contents of the polymers reduced, but also the tensile modulus of elasticity and the productivity (g of polymer/g of titanium containing solid component) are significantly and unexpectedly improved. For example, the tensile modulus of elasticity of Example 1 was 2280 N/mm<sup>2</sup> as opposed to 2140N/mm<sup>2</sup> for corresponding Comparative Example A, and the productivity for Example 1 was 31,000 as opposed to 24,200. Similar improvements can be seen for

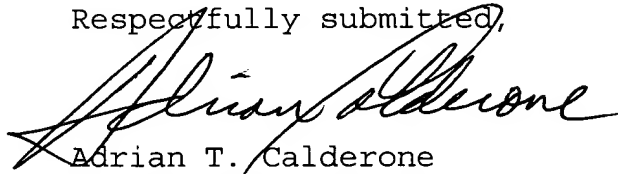
Examples 2 and 3 as opposed to corresponding Comparative Examples B and C, respectively. Nowhere in the cited references is there any appreciation of the fact that the productivity of the polymerization of propylene and the tensile modulus of elasticity of the resulting polypropylene can be significantly improved by the chlorine-free intermediate in the polymerization process. The improvements achieved by Applicants' claimed method are neither disclosed nor suggested by Shinosaki et al. and Noristi et al., taken either individually or in combination. Accordingly, claim 3 and all claims depending therefrom are submitted to be patentable over the cited references.

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**CONCLUSION**

Reconsideration and withdrawal of the rejection in light of the above remarks is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Adrian T. Calderone", is written over the typed name.

Adrian T. Calderone  
Registration No. 31,746  
Attorney for Applicant(s)

DILWORTH & BARRESE, LLP.  
333 Earle Ovington Boulevard  
Uniondale, New York 11553  
Tel: (516) 228-8484  
Fax: (516) 228-8516

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